Specification

Pressure ranges (all ranges available in either gauge or absolute pressure)

Min PRESSURE	Max PRESSURE
Dedicated Barometer	
0 bar	1 bar
0 bar	1.6 bar
0 bar	2 bar
0 bar	5 bar
0 bar	10 bar
0 bar	20 bar
0 bar	35 bar
0 bar	70 bar
0 bar	100 bar
0 bar	150 bar
0 bar	210 bar

Barometric Reference available as an option, for gauge emulation with an absolute sensor.

Electrical

Power Supply	85–250VAC @ 50–60Hz

Physical

Weight	7 kg (16 lbs)
Dimensions	390 mm x 3U x 300 mm (15 3/8" x 3U x 12")
Main Pressure Connections	G1/8 to ISO 228-1 (1/8" BSP Int.)

Environmental

Temperature	Storage –25˚C to 70˚C (15˚F to 160˚F) – dry non-condensing environment Temperature Compensation 15˚C to 25˚C (60˚F to 77˚F)
Calibrated	20˚C (68˚F)
Operating	10˚C to 30˚C (50˚F to 85˚F)
Humidity	0% RH to 90% RH non-condensing
Conformity	P.E.D.97/23/EC (UK), EN61010, EN61326, ROHS & WEEE CE marked

Display

Display	Display 6.4" Colour TFT-LCD touch screen display Readout +/- sign, and up to 8 digits. Limited to 0.00001 in units other than Pa
Pressure Units	Pa, hPa, kPa, MPa, bar, mbar, mmH2O, psi, user-definable unit

Performance

Accuracy	0.01% FSD. The accuracy statement includes hysteresis, repeatability and linearity
Control Stability	0.005% FSD

Pressure Management

Use of latest digital compensation techniques, coupled with a very stable, and accurate, measurement pressure cell, equates to a highly accurate SMART pressure sensor. This enables a multitude of SMART sensors to be connected to a common base unit. This flexibility not only ensures that the required accuracy can always be achieved, but reduces downtime due to the ability to easily replace the SMART sensors. On fitting a SMART sensor, the MC1 instantly recognizes the sensor range and amends its control algorithm to suit the new range.

Over Pressure Capabilities	110% FSD of sensor being used. If pressure greater than this is applied, the sensor's accuracy may be compromised and a calibration check should be performed.
Burst pressure	200% FSD of sensor being used to a maximum pressure of 280 bar.
Software	With the connectivity of RS232 or IEEE-488, and a standard communication protocol command set, the full benefit of Automatic Test Equipment (ATE) is achieved. This ensures the end user has the ability to communicate with numerous software packages, and also bespoke software. The MC1 is supplied as standard with a power lead, user manual, sensor interchange tool, certificate of accuracy traceable to national/international standards.

DH·Budenberg
The Pressure Reference

Trusted and Respected Throughout the World.

Contact one of our offices below to discuss your calibration and servicing requirements.

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DH-Budenberg Support

As with all of DH-Budenberg equipment, full technical and after sales services are provided. The following are available for this product:

Pressure Measurement Training:
Comprehensive training which focuses on the operation, and application of the unit.
Individual courses can be tailored to suit the customers requirements.

Re-Calibration and Repair Plan:
A service agreement, that includes the Re-Calibration of the smart sensor and a basic service of the full instrument to ensure it is functioning correctly, covering minor repairs.

Ancillary Equipment/Design service:
Ranging from pressure connections, to full system designs.

Due to DH-Budenberg Ltd continuous improvement of their product ranges, we reserve the right to change the contents or form of the product and documentation at any time without prior notice having been given. Please consult your local Sales representative to ensure you have the latest information

Industrial Range

MC1 Industrial Pressure Controller

- Ranges from -1 to 210 bar g or 0 to 210 bar A
- Full colour touch-screen user interface
- Easy-to-use intuitive control menu

A true modular pressure controller covering the range -1 to 210 bar at 0.01% accuracy.

- Interchangeable SMART Sensors
- Accuracy 0.01% F.S.D.
- Control Stability 0.005% F.S.D.

DH·Budenberg
The Pressure Reference

Model MC1 Industrial Pressure Controller

The new MC1 high-accuracy controller is the latest addition to the DH-Budenberg range of world-leading pressure calibration products. Using proven and reliable technology, DH-Budenberg have produced a controller that is based around a single base unit that can control pressures to 0.005% across an extremely wide range, from -1 to 210bar. Along with fully interchangeable SMART sensors, the MC1 provides a flexible and high-accuracy solution for both industrial and metrological applications.

The SMART sensors, as well as being quickly interchangeable, are instantly recognized by the MC1 and the range is displayed for the user on the large colour screen. All sensor ranges are available in either gauge or absolute mode allowing maximum flexibility from one single MC1 chassis. When fitted with an optional barometer, the MC1 can also provide gauge simulation from an absolute SMART sensor. DH-Budenberg SMART sensors contain all of their calibration coefficients on-board, and can be installed in any MC1 chassis.

The chassis itself, is available as a laboratory style unit, or can be fitted with a 19" rack mount for integration into a fully automated test system.

The MC1 comes as standard with two operating syntaxes for full pc-driven automation. It can be used with the DH-Budenberg syntax command set, or can also be used with a SCPI command set. Customer-based software drivers, such as those in LABVIEW, can also be provided as an option.

Interchangeable SMART Pressure Sensor

Use of latest digital compensation techniques, coupled with a very stable, and accurate, measurement pressure cell, equates to a highly accurate SMART pressure sensor. This enables a multitude of SMART sensors to be connected to a common base unit. This flexibility not only ensures that the required accuracy can always be achieved, but reduces downtime due to the ability to easily replace the SMART sensors. On fitting a SMART sensor, the MC1 instantly recognizes the sensor range and amends its control algorithm to suit the new range.

SMART Sensor Recalibration

Only the SMART sensor needs to be returned for calibration.

Following recalibration, a simple leak test needs to be performed, before the unit is put back into full operation.

All calibrators are also available with:

UKAS, COFRAC, or DKD Certificate of calibration.

General

Ranges from -1 bar to 210 bar g or 0 to 210 bar A.

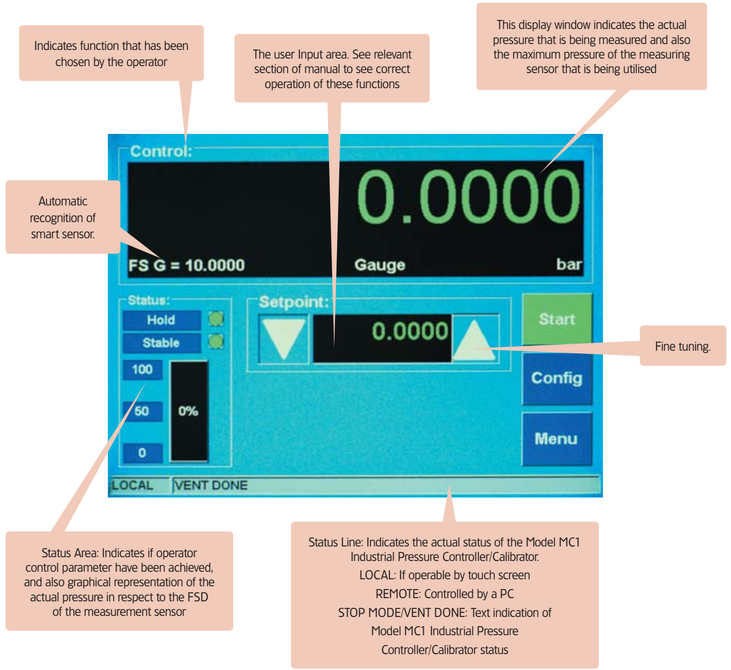
Barometric Reference Option.

Accuracy 0.01%.

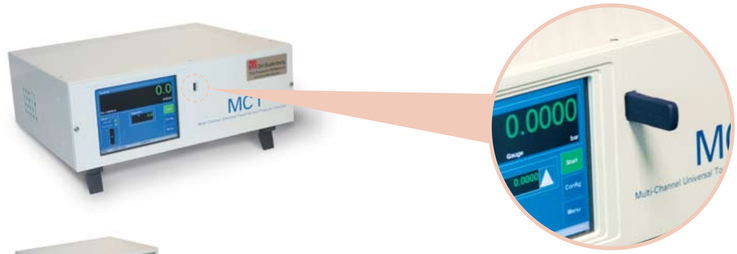
Calibration coefficients are stored on-board the sensor rather than the MC1 chassis.

Requires external clean, dry, non-corrosive, filtered gas supply.

Full Colour TFT Touch-Screen


Indicates function that has been chosen by the operator
The user Input area. See relevant section of manual to see correct operation of these functions
This display window indicates the actual pressure that is being measured and also the maximum pressure of the measuring sensor that is being utilised
Automatic recognition of smart sensor.
Control:
0.0000
FS G = 10.0000
Gauge
bar
Status:
Hold
Stable
100
50
0
0%
Setpoint:
0.0000
Start
Config
Menu
Fine tuning.
LOCAL
VENT DONE
Status Area: Indicates if operator control parameter have been achieved, and also graphical representation of the actual pressure in respect to the FSD of the measurement sensor
Status Line: Indicates the actual status of the Model MC1 Industrial Pressure Controller/Calibrator.
LOCAL: If operable by touch screen
REMOTE: Controlled by a PC
STOP MODE/VENT DONE: Text indication of Model MC1 Industrial Pressure Controller/Calibrator status

An easily accessible USB port is located on the MC1 front panel. This can be used for upgrading the MC1 embedded software, or for retrieving information such as leak test files, to a PC for further analysis.



Operating principles and features

Operating Menu

All of the MC1 control functions and parameters are accessible through the large full-colour touch-screen. The menu layout is extremely intuitive, and easily navigable and therefore needs no specialist training. Each of the functions is available through large, easily read touch-buttons, using a logical process sequence in order to produce fast results.

Functions

Volume Test	The MC1 has a unique system of calculation of the volume under test. Using this calculated volume, the MC1 automatically selects the internal control algorithm to provide the best pressure generation response for the operating conditions.
Divider/Sequencing	This function allows the user to quickly calibrate an instrument across its full range at equal pressure points. The user enters the full range of the device under test, and the number of test points required, and then the MC1 automatically calculates the pressures steps needed. The user can then command the MC1 to step up and down through pre-calculated test points.
Preset	Is similar to the divider function, except that the pressure steps are selectable by the user, and do not need to be equally spaced across the full range.
Leak Test	Similar to the pressure switch test above, leak test files can be created and stored on the MC1 for retrieval via USB. The MC1 generates the requested pressure and then the control output is isolated. The MC1 monitors the external pressure, and records the decay to indicate the leak-rate of the system under test.
Fine tuning	The selected pressure set point can be "toggled" up and down by using the touch-screen tuning buttons. The fine-tuning pressure step is user-selectable down to 0.005%
Stability Display	A pressure stability indication is present during all pressure calibrations, and consists of three elements: a) a bar graph giving a dynamic picture of the pressure change; b) a red/green 'hold' indication that the pressure has reached the user-selectable "stable pressure window"; c) a red/green 'stable' indication that the pressure has remained stable for the user-selected requisite time-span.
Over-range protection	The MC1 automatically detects the SMART sensors which are fitted, and displays the pressure range of the fitted sensor on the control screen. The selection of pressure values is then automatically restricted to the SMART sensor range, therefore ensuring that the sensor cannot be over-pressurised in normal use.
Taring	The need for taring of the controller is eliminated by automatic zeroing of the sensor, each time the MC1 is set to "vent"
STOP function	The MC1 can obviously be used in dynamic CONTROL mode to generate an accurate pressure. Alternatively, when switched into "STOP" mode, the MC1 can be used to monitor the output pressure circuit in static mode.